

:p/ 1\=I\*Ô@H@q2 :>DÉA 2i)í?i>Ã;60•(Ž  
 , Q I R U P D W L R Q ) R U P I R U 6 - 7 8 \* U D G X D W H

B.0; \* \ Ÿ % DVLF , QIRUPDWLRQ

B.0; =0 &RXUVH	Ä]· &KLQHV FFP ° _ 1DPH (QJOL\$G YDQFHG 0DQXIDFWXULQJ 7HFKQRORJ)
-6 &UHGLWV	-& 7HDFKLQJ +RXUV -& Ä -6 B.&Ä
0B.-0 6HPHVWU	U“-0 6SULQJ _VD-0 &URVV VH PHV 1B 6SDQQLQJ Z-YCHU PHUPHÄWPHUÅ Ä
B.0;2« » &RXUVH	CJF9 B. 3URJUDP B.0; 62« (S)HFWLYH &RXUVH &RXUVH 7\SH (B.0; )RU IXOO WLPH VWXGHQWV
B.0; WCX &RXUVH &	CJB 6SHFLDOLJHG &RXUVH Š B.0; 'REWRUDO /HYHO DWHJRUI 7DUJHWLQJ 6WXGHQWV
.B.B@0 ,QVWUXFWLRQ /DQJXDJH	KLQHVH k?±,B.é? 7HDFKLQJ B.2% - Q FODVV WHDFKLQJ 0HWKRG
@52« » *UDGH	1y1\ f /HWWHU JUDGTLQJ k2+63h é? (IDP 0HWKRG) Aë (VVD\
0B.L'3+ 6FKRRO	€É0 -> 0; -L' 6FKRRO RI 0DWHULDO 6FLHQFH DQG (QJLQ
pŽ-0 6XEMHFV	€É0 -> 0; 0DWHULDO 6FLHQFH DQG (QJLQHHULQJ
COCS % 8 3HUVRQL	= 1DPH ' , ' ... } 6FKRRO 6,,3+é? ( PDLO BR+ €É0 -> 0; /H[LH#VMWX HGX FQ

B.0; ™ ... Ÿ ([WHQGHG , QIRUPDWLRQ

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 LÄ-v0 œ Ä ¶ e, ° < , IFV ¶ e (F p % : 3 ^5 #, @9í F Ö, ° ©  
 Kd ¶ e , -FF\$F < ~ F IFV0 œ % 31 > IFV ¶ e © e IFV PCœ +U Ž, ° q %  
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 ¥ )æ 1x\* < ¶ e 1•, ° 6 æ F Ö52 > Ê + ^ Ä Ý ÷ 6 DAôAx = IFV 1x\* <  
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 F IFV ¶ e (F p Q IFV P1 ; Ñ, ° q? · !ë , e Ö Ö52 > 31 Ä ùF 3"G  
 5 #, < , ° H ? · 0.v >  
 B.0; 1° ü  
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 &RXUVH  
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† İ F ~ ¶ e e H " F ~ pH ? · = 0 )æ ^ ô2±/t P c, ° 6 67, ° +U  
 Ý ¶ e · 6 > W -AôAx IFV\* < Aô D ¶ e, ° < 6 Ö , ° 5 PÄ IFV f \_ , °  
 Ax1 í p ¶ e = ¥ ¶ e p e Ç, ° F ~ \* < Aô , C!Eý ¼ % a Kµ, ° F % D % > LÄ-vAx1 í p  
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 \* < Aô Ä ¶ e, ° H ? · e Ç ¶ e , ~ F ¼ Ax1 í p E» ß AôAx ' & \$ ' µ , E » ß IFV  
 ' & \$ 0 µ , E » ß 0A ' & \$ (µ , "x 0A ' 5 (µ Ä !FU Ö Á IFV ' 53 5µ < ·  
 AôAx D < · IFV ' 90 µ 1 · 6 ~ < e ¶ e >  
 bB40A < W -AôAx IFV p = > & i , ž M ~ = 315 fAè @ 4ú F ~ F IFV ¶ e  
 , ° & \$ ' & \$ 0 & \$ (5 (, 53 5,79 01 · < e ¶ e, ° 3 » L < )æ (i , 5 v  
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' μ Â Á 0A > ',° 0 b ¶73. Äü Â 0A ÔD+ ¶73  
 ' μ - = 0 Ä 0AL\$NÍ,°Eý0AAôAx73 Ñ  
 ' μ / 0AN¼ #¿ ,°L\$NÍ73 ? žM~,°AÚÄü  
 ' μ73 UFPEý œM~ Â j>žEô8 ',°)# Â D ð Ú#w"ÖFP,°73 Ñ  
 ' μ - ? Q æ EAü Â 52 >F +^\* <Að Â ¶ e •!ëF >, Q æAôAx,° i#

ÄN« >] · 08\$ É6+BB' È"r Eilö Ä Ä  
 &RXUVH LQWURGXFWRQ  
 : L W K W K H G H Y H K Q R S R P J H Q P W Q R I D F W F X U H G  
 K D V E H F R P H W K H N H \ W H F K Q R O R J \ I R B S R U K D U H F  
 F R X Q W U L H V D Q G G U D G W R O V K H G P D Q R S F A W W U I P Q J 7  
 P D Q X I D F W X U L Q J W H F K Q R O R J H P D L Q R W H F D F O R X O U R L Q  
 L Q G X V W U \ E X W D O V R W K H P D L Q V R P S L S R G W Y W E R I S G  
 7 K H D G Y D Q F H G P D Q Q R O R J X U L Q J W W H F L Q W D W U D W  
 D F K L H Y H P H Q W V R I P D F K L Q H U \ P D W H U Q D J H P H Q M  
 W H F K Q R O R J \ L Q W R W K H Z K R O H P D Q X O B S V K O W Q D  
 G H V L J Q P D Q X I D F W X U L Q J D Q G P D Q D J H P H Q W L R Q R  
 D G Y D Q F H G P D Q X I D F W X U L Q J W H F K Q R O R J \ I R B S R U K D U H F  
 F R Q V X P S W L R Q D Q G D J L O H S U R G X F W I F K Q R O R J \ D K E  
 E H H Q W K H P D L Q P H D Q V W R L P S U R Y H U W K H L F O R P S V H  
 D Q G L W L V W K H L P S R U W D Q W I R X Q S D Q D V R I Q R O R L Q  
 D Q G S U R P R W H W K H G H Y H O R S P H Q W R I Q D W L R Q D O  
 7 K H P D W H K Q R O R J \ I L R U R Q L H Q R I W H K F R O G  
 W H F K Q R O R J L H V L Q K X P D Q V R F L H W \ V L W K P E P H O V D O  
 W K H R U \ D Q G W H F K Q R O R J \ G H Y H O R S P H Q W D R I J S Q H  
 O R Q J Z D \ I U R P W K H Q H F D U D D X W D H V S H U L Q J L Q W R W F K H U  
 V X S S R U W H G E \ F R P S X W H U W H F K Q R O R J W K D Q G K H L  
 S H Q H W U D W L R Q R I H F R O S S W J H U L Q V G H W K Q R O R J R I W  
 F R P S X W H U W H F K Q R O R J \ K D V E H F R P H J D Q I L P S R H W O  
 P R O G G H V L J Q D Q G P D Q X I D F W X U L Q J H W K R R G L D Q G L  
 Q L N H F R P S X W H U D L G H G G H V L J Q & \$ ' & \$ P O P S X W I  
 F R P S X W H U D L G H G H Q J U G M H U M G J H Q \$ L Q H S D S Q G  
 S U R W R W \ S L Q J 5 3 H 5 7 L J Q Y D Q G X P D Q X I D E M H K O L Q J P H G  
 7 K L V F R X U V H Z L O O W D N H W K H P R O G V G H W I L Q J S  
 F R P S U H K H Q V L Y H O \ D Q G V \ V W H P D W L F D H O Q D W \ L S R O  
 G H Y H O R S P H Q W V W D W X V R I & \$ ' & \$ 0 & \$ ( R O S V W S W H  
 D G Y D Q F H G P D Q X I D F W X U L Q J W H F K Q R O R J \ N O R Q C L O  
 P D L Q U H V H D U F H F R E W D Q F K R W H F K Q R O R J \  
 H D F K L Q J R E M H F W L Y H V  
 ' μ 7 R D F K L H Y H W K H D E L O L W \ W R X V H R O D H U S H U G F W  
 S U R E O H P V  
 ' μ 7 R P D V W H U W K H E G M L F D Q G L H O O J I N Q R H Z O D D J R S U W  
 H Q J L Q H H U  
 ' μ 7 R D F K L H Y H W K H D E M X V E G V H G J R O H F Q J L Q H H U  
 ' μ + D Y H D F R P S U H K H Q V L Y H X Q G H U V W D Q G L Q H R  
 H Q J L Q H H U L Q J I L H O G  
 ' μ + D Y H W K H D E L O L W \ W R H [ S U H V V L G H Z U M W O G Q F  
 R U D O I R U P  
 ' μ + D Y H W K H L Q Q R Y D W L Y H F R Q V F L R X V Q Y H D W L D G C  
 G H V L J Q E \ F R P S U H K H Q V L Y H X V H R I W K H R U \ D Q G W

B.0;1° û  
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 &RXUVH  
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<p>‰ – W4â ]. 6\OODEXY</p>	<p>Ä *AB G&gt; ' ? È 4 G µ é Ö1 8² Ä k?± µ é ÄB. &amp; Ä‰ – é ?1y Ä</p>	<p>¾B4 œ , + R X U V R U P D W</p>	<p>• œ ï E R U P D W</p>
	<p>• œ » ï &amp; R Q W H Q W</p>		
	<p>û4ý -Lu - µ &amp; \$ ' ° _ , ' ... ) à (æ È Äâ @ ... FP » , ' ... Ä û4ý4ï v Ä &gt; ~ M' Ä Î f Ä ò FFP » , ' ... Ä Äâ @ "M'FP » ° _ È 5 "M"r Ô Ä "M' • 5ž È "M' &amp; h È " M' › Ð È "M' , Ô1y Ä Äâ @ (© ± FP » ° _ Ä</p>		<p>B4 8</p>
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	<p>Äâ @ &lt; Š ) à Î ° _ È &lt; Š ) à Î , ' n / j Ä Ô Ä ° _ Ä Äâ @ &lt; Š fFP ° _ È &lt; Š fFP * Q È 6 Ä ° _ Ä &lt; Š ) à Î - 0 Ô ù , ' Ä + X Ä</p>		<p>B4 8</p>
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<p>‰ – W4â Ä (QJÖÄLVK 6\OODEXY</p>	<p>ÄN « &gt; ] . 08 \$ È 6 + B B ' È " r E i L ö Ä Ä</p>		
	<p>&amp; R Q W H Q W</p>	<p>+ R X U V ) R U P D W</p>	
	<p>, Q W U R G X F H W K H &amp; G H Y W H O R S P H Q W R I J H DEURDG DQG H [ S O D L Q W K H G H Y H O R S P H Q W R I J H , Q W U R G X F H W K H G H Y H O R S P H Q W R I Z L U H I U D P H V SDUDPHWULF PRGHOLQJ ([SODLQ VXUIDFH PRGH LQFOXGLQJ VXURDFHVXUQDFHWHW VXUIDFH H [ W H Q V L R Q V X U I D F H W S O L H S L Q J V X U H W F ([SODLQ IHDWXUH PRGHOLQJ WHFKQLTXHV</p>		
	<p>, Q W U R G X F H W K H &amp; G H Y W H O R S P H Q W R I J H DEURDG DQG H [ S O D L Q W K H Z R U N L Q J S U L Q F L S O H R I &amp; 1 &amp; P D F K L Q H W R R O V ([SODLQ 1 &amp; D X W R P D W L F</p>		

	<p>WHFKQRORJ\ H[SODLQ RRRRFRORRQWGDWFFRRUGLQDWH  WRRO SDWK JHQHUDWLRQ WHFKQRORRJI\</p> <p>,QWURGXFH DJLOH PDQXIDFWXULQJ WHFKQRORRJI\ PDQXIDFWXULQJ SWRIGKQWORGJWD PDQXIDFWXULQJ WHFKQRORRJI\ DQGGFRPSXWHUWDLGKQRORRJI\</p> <p>,QWURGXFH WKHHILQJWJH HUHWHPHFRQWPHFKORORRJI\ DQGGFRPSXWHUWDLGKQRORRJI\ WKH YLVXDFKQORRORRQW ILQLWH HOHPHQW DQDO\VLV</p> <p>,QWURGXFH UHYHUVH HQJLQHULQJ WHFKQRORRJI\ GDWD SUHSURFHVVLQJ DQG VXUIDFH UHFROVWLQJ HQJLQHULQJ 7KHRIDSSHOYHFDWLR RHQJLQHULQJ LQWHUGLVFLSOLQDU\</p> <p>([SODLQ ODVHU WDSIEKQSRORRWRW&amp;UQH GLPHQVLRQ ODVHU PRGHOLQJ VHOHFWLYH ODVHU VLOWHULQJ PRGHOLQJ PHWDO,QWVHULQJWDSIEKQSRORRWRW&amp;UQH RI 'SULQWLQJ</p> <p>([SODLQ YLUWXD&amp;JUHG&amp;OLSVODWDFKQRORRJI\ WHUDFWLRQ WHFKQRORRJI\ RI Y[SODLQOYUHW&amp;DQ\PDQXIDFWXULQJ WHFKQRORRJI\ YLWXLQJO PRGHOLQJ DQDO\VLV WHFKQRORRJI\ 7KH DSSOYHFDWLRQLRQWHUGLVFLSOLQDU\</p> <p>,QWURGXFH URERWLFV H[SODLQ LQWHUGLVFLSOLQDU\</p> <p>,QWURGXFH DUWHILWHF&amp;QROORHO&amp;DQGH[SODLQ WHUGLVFLSOLQDU\ DUWLILFLDO LQWHUGLVFLSOLQDU\ /HQUQLQJ GLVSOD\ RI FRPSXWHU DLGHG WHFKQRORRJI\ PDQXIDFWXULQJ DQGGFRPSXWHUWDLGKQRORRJI\</p> <p>,QWURGXFH WKH GHYHORSPHQW WHFKQLFDO FWHVHDFK VWDWXV DW KRPH DQG D&amp;DQDO\VLV WHFKQRORRJI\</p> <p>7KH UHVHDFK SURJUHVV RI PLFURIRUPLQJ WHFKWKRUR\ DQG WHFKQRORRJI\ QXPULFDQ&amp;DQDO\VLV WHFKQRORRJI\</p>
<p>B.0;?±"r  Ä].Å  5HTXLUHPHQW</p>	<p>ÄB.0;63 h é ? Ä63 h 7 ö1y x = A ¼ ± Ä  © , 95α ' P , œ+U L; ½)d , ' f ~F IFV ¶ e &amp; \$ ' &amp; \$ 0 &amp; \$ (5 ( ,  ' %o ! , &lt;• IFV , p ž ð1 • &lt; e1 • ¶ e , ° 6 æ . J0 -F &lt; &gt;  69B, B40A Û € D © , F5 &gt; -H &gt; © , F5 ' P ÂB4 8 &gt; ž) æ Aú - , B40A  Û € Û € † ï , ° ~F ] , Û € , ° FqEQ ] , " } Û &gt; ž Ê ö , ° \$ ; ! Û , 1 \$ L \$ N Í  , o!™ . α ] &gt; 69 &gt;</p>
<p>B.0;?±"r  Ä(QJOÅLVK  5HTXLUHPHQW</p>	<p>ÄN« &gt; ] . 08\$ Ê6+BB' Ê"r EiLö Ä Ä  8VXDOO\ DUUDQJH WKH KRPHZRUN OFRQVXWUWUHVHDFKWHV  DGYDQFHG PDQXIDFWXULQJ WHFKQRORRJI\H\$ULQVFKLQV &amp; \$  PDQXIDFWXULQJ URERW DQG VR RQ  7KH WHVW LV PHDVXUH E\ WKH FRUXHUVXUHSRUW&amp;DQDO\VLV  HYDOXDWHG E\ KRPHZRUN DQG FODVVURFRSUSWHUFRIDQ  DGYDQFHG QDWXUH RI WKH UHSRUW PDQXIDFWXULQJ OFRQVXWUWUHVHDFKWHV  SUHVHQQDWLRQFRQVXWUWUHVHDFKWHV TXHVWLRQV</p>
<p>B.0;Ct\$Ä  Ä].Å  5HVRXUHFHV</p>	<p>Ä%o € Ä%o ò Ä5•1 Ct É1y ÄÄ  žLúEj (Æ)æ W -AôAx IFV* &lt; Að D ¶ e , @#- ÚFP ] œ 0 (~ / t</p>
<p>B.0;Ct\$Ä  Ä(QJOÅLVK  5HVRXUHFHV</p>	<p>ÄN« &gt; ] . 08\$ ÊB' Ê"r EiLö Ä Ä  =KRX ;LRQJKXL PRGHUQ PROG GHVLJQWHFKQRORRJI\IDFKWD  HVRWRQJ 8QLYHUVLV\ 3UHVV</p>
<p>7#  1RWH</p>	

